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MICHALSKI, T.

MICHALSKI, Tadeusz; RUCZKOWSKA, Janina; MORDARSKI, Marian

Antibacterial properties of Streptomyces. I. Isolation of Streptomyces.
Arch. immun. ter. dosw. 5:225-230 1957.
(STREPTOMYCES, culture
isolation of numerous strains from soil samples (Pol))

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POLAND / Plant Physiology. General.

I

Abs Jour : Ref Zhur - Biol., No. 1, 1959, No 1254

Author : Boratynska, Wanda; and Michalski, Tadeusz.
Inst : Institute of Medical Plants
Title : Effect of the Ultrasound on Morphine Content in the Opium Poppy.

Orig Pub : Biul. Inst. Rosl. Loczn., 3, No. 3, 251-256, 1957

Abstract : The exposure of seeds to ultrasound in doses of 0.5-1 watts/sq.cm., 800 kilocycles for 30 seconds to 5 minutes caused some reduction in the morphine content of the opium poppy plant, to an extent increasing with the dose and duration of exposure. The weight of the seeds of experimental plants was a little lower than that of the control plants, and it did not depend on the intensity and duration of action of the ultrasound. The ultrasound accelerated the germination of seeds and stimulated the growth of plants in the early stages of development. -- O. V. Bogdashevskaya.

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Michalski i Tadwuxz

SZULGA, Teofil; MORDARSKI, Marina; MICHALSKI, Tadwuxz

An apparatus for seeding of Streptomyces. Arch. immun. ter. dosw. 4:363-370 1956.

1. Instytut Immunologii i Terapii Doswiadczalnej PAN we Wroclawiu (Dyrektor: prof. dr St. Slopek) Dzial Bakteriologii i Antybiotykow (Kierownik: prof. dr St. Slopek)

(BACTERIOLOGY, appar. and instruments
appar. for seeding of Streptomyces)
(STREPTOMYCES, culture
appar. for seeding)

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where

$$\left.\begin{aligned} Dx_i &= \Delta y_i' \cdot \operatorname{ctg}(K_i \pm 200^g) - \Delta x_i' \\ Dy_i &= \Delta x_i' \cdot \operatorname{tg}(K_i \pm 200^g) - \Delta y_i' \end{aligned}\right\} \quad (7)$$

The above method may also be used for marking the free terms of internal directions occurring during compensation of multiple inverse intersection and multiple bilateral intersection. There are 2 figures, 1 table and 2 Soviet-bloc references.

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$$l_i = \frac{\varrho}{s_i} \cdot \sin K_i \cdot Dx \qquad l_i = \frac{\varrho}{s_i} \cdot \cos K_i \cdot Dy$$

and by transforming the above for inverse directions, i.e. from intersecting point to resecting point P_i, the following may be written

$$\left.\begin{aligned} l_i &= -\frac{\varrho}{s_i} \cdot \sin (K_i \pm 200^g) \cdot Dx \\ l_i &= -\frac{\varrho}{s_i} \cdot \cos (K_i \pm 200^g) \cdot Dy \end{aligned}\right\}$$

Due to the fact that the free terms l_i are small magnitudes, it is possible to substitute in the above equations in place of values of oriented directions $(K_i \pm 200^g)$ the values of approximated azimuth v_i. It is easy to note that coefficients at Dx and Dy are actually direction coefficients of a_i and b_i defined by Equation 4, but used also in transformed form as

$$a = +\frac{\varrho}{s} \cdot \sin v; \qquad b = -\frac{\varrho}{s} \cdot \cos v$$

After taking into consideration the above dependence the following workable formula is obtained

$$l_i = a_i \cdot Dx_i; \qquad l_i = b_i \cdot Dy_i \qquad (6)$$

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that between orientated direction K_i and the approximate azimuth v_i^g a relation exists $v_i^g = K_i + l_i$, illustrated geometrically in Fig. 1. If the free term l_i does not equal zero, the oriented direction passes by the approximated point P^g, of the intersected point P and is distant by the magnitude of

$$h = \frac{l_i}{\rho} \cdot s_i \qquad (5)$$

intersecting parallel to the axis cut in point Px, and parallel to the axis of ordinates in point Py. It is easy to note that the position of the two points is defined, as abscissa of point Px results in $\Delta y_i^g \cdot \operatorname{ctg} K_i$, and ordinate of point Py equals $\Delta x_i^g \cdot \operatorname{tg} K_i$. It is possible to determine the distance of PxP = Dx and PyP = = Dy, namely

$$\left.\begin{aligned} Dx &= \Delta y_i^g \cdot \operatorname{ctg} K_i - \Delta x_i^g \\ Dy &= \Delta y_i^g - \Delta x_i^g \cdot \operatorname{tg} K_i \end{aligned}\right\}$$

Between the sectors Dx and Dy and the sector h, the following dependence exists

$$h = Dx \cdot \sin K_i, \quad h = Dy \cdot \cos K_i$$

by substituting them in Equation 5, the following is obtained

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A076/A126

3.4000

26086

AUTHOR: Michalski, Tadeusz, Master of Engineering

TITLE: A method for direct marking of free terms during compensation of multiple intersection

PERIODICAL: Przegląd Geodezyjny, no. 4, 1960, 122 - 123

TEXT: During geodetic calculations values obtained should be free of mathematical errors, otherwise the marked elements are misleading and can not be regarded as basic data for further work. The above condition necessitates that all values must be re-checked during calculations, especially in such calculations where the greatest possibility of mathematical errors occurrs,i.e. compensation of multiple intersections. A number of control methods are known, among them the method presented by Master of Engineering Jerzy Gaździcki, published in the periodical "Geodezja i Kartografia" 1957, no. 4, 243, which is however, rather complicated and time consuming. The author of this article presents his own method according to which, direct marking of free terms during compensation of multiple intersections is calculated and re-checked much faster. It is seen from the following equation

$$l_i = v_i^{g} - (K_i \pm 200^{g}) \qquad (3)$$

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MCGAHEE, T.

Calculation of the hypotenuse without evolution; with an arithmetic and a slide rule.

J. S2 (Technical Education, London, No. 13, [illegible] 19[illegible]

SO: Monthly Index of European Accessions (AEI) Vol. 6, No. 11, November 1957

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

MICHALSKI, T.

Contribution to the analysis of intersection. Tr. from the Polish. p. 45.
(Geodeticky A Kartograficky Obzor, Vol. 3, No. 3. Mar 1957, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAI) LC, Vol 6, No. 8, Aug 1957, Uncl

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

MICHALSKI, T.

Survey of the development in organizing geodetic works and some conclusions; from a rigidly fixed tean to an elastic production brigade. Pt. 2. p. 171. Vol. 12. no. 5, May 1956 Warszawa

PRZEGLAD GEODEZYJNY

SOURCE: East European Acession List (EEAL) Library of Congress
Vol. 5, no. 8, August 1956

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

MICHALSKI, T.

Survey of the development in organizing geodetic works and some conclusions; from a rigidly fixed team to an elastic production brigade. Pt. 1. (To be contd.) p. 131. Vol. 12, no. 4, Apr. 1956
Warszawa
PRZEGLAD GEODEZYJNY

SOURCE: East European Acession List (EEAL) Library of Congress
Vol. 5, no. 8, August 1956

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

MICHALSKI, T.

"Most Advantageous Case of Resection", P. 33. (GEODEZJA I KARTOGRAFIA, Vol. 3, No. 1, 1954, Warszawa, Poland)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 1, Jan. 1955, Uncl.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

MICHALSKI, T.

"Weights of determining elements in a two-direction intersection". p. 219 (GEODEZJA I KARTOGRAFIA, Vol. 1, No. 4, 1952. Warszawa, Poland)

SO: MOnthly List of East European Accessions. (EEAL). LC Vol. 4, No. 4, Apr 1955. Uncl.

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MICHALSKI, T.

Michalski T.

Michalski T., Eng. "The Checking of Computations"
(Kontrola obliczen). Przeglad Geodezyjny. No. 3-4, 1950, pp. 76-78

The checking of computations is a necessary supplement to geodetical undertakings. Different methods of checking the arithmetical operation; special control formulae which make it possible to check the calculations made by means of generally applied fundamental formulae. By this method we can check the calculations of azimuths, sides (of poligons), increases of co-ordinates and so one. It would be very appropriate to publish special tables of check functions for different angle values which occur in the checking formulae.

SO: Polish Technical Abstracts - No. 2, 1951

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MICHALSKI, T.

Michalski T.

Michalski T. "The Accuracy and Certainty of Locating a Point by the Method of Manifold Resection"
(Dokladnosc a pernosc wyznaczenia punktu metoda wielokrotnego wciecia).
Przeglad Geodezyjny. No 1, 1949, pp. 26-30, 3 figs.

The author proves by numerical examples that the criterions of characteristics of accuracy of manifold resection usually applied (mean errors and ellipse of mean error) may in certain instances be entirely deceptive. It is possible, namely, in the case of an observation system unfavourable from a geometrical point of view, to vary the values of observation within limits many times in excess of the limits of mean errors, and to obtain, in consequence of re-balancing, co-ordinates which are vastly different from the co-ordinates originally computed, and yet characterised as to accuracy by a very small mean error in point location. In this connection, the author recommends the exercise of caution in the evaluation of the accuracy measurements on the basis of mean errors, particularly when comparing the results of various triangulations. When examining the triangulation of a lower order, the author urges that it is desirable to concentrate the attention rather on the arrangement of the determining elements, since in the event of lack of effective elements of control the accuracy of point location is deceptive.

30: Polish Technical Abstracts - No. 2, 1951

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MOLKE, Waldemar; MICHALSKI, Stanislaw; ZAWISTOWSKI, Leonard

Periston as a plasma substitute. Pol. przegl. chir. 35 no.10/11:1148-1149 '63.

1. Z II Kliniki Chirurgicznej AM w Gdansku Kierownik: prof. dr K. Debicki.

(POLYVINYLPYROLIDONE) (LIVER)
(PHARMACOLOGY) (RNA)
(LIPID METABOLISM)

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MOLKE, Waldemar; MICHALSKI, Stanislaw

Hepatic changes in guinea pigs and rabbits after the administration of periston. Pat. polska 12 no.4:473-478 '61.

1. Z II Kliniki Chirurgicznej AMG Kierownik: prof. dr K.Debicki Z Zakladu Anatomii Patologicznej AMG Kierownik: prof. dr W.Czarnocki.
(LIVER pharmacol) (POLYVINYLPYRROLIDONE pharmacol)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

MOLKE, Waldemar; MICHALSKI, Stanislaw

Experimental application of dextract in guinea pigs and consecutive renal and hepatic anatomo-pathological changes. Par. polska 7 no.3:273-278 July-Sept 56.

1. Z II Kliniki Chirurgicznej A.M. w Gdansku, Kierownik: prof. dr. K. Debicki, i z Zakladu Anat. Pat. A.M. w Gdansku Kierownik: prof. dr. W. Czarnocki, Gdansk, Lipowa 3.

(LIVER, effect of drugs on,
dextract, histopathol. changes in guinea pigs (Pol))
(KIDNEYS, effect of drugs on,
same)
(DEXTRAN, effects,
on kidneys & liver, histopathol. changes in guinea pigs (Pol))

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MICHALSKI, Ryszard, mgr inż.; KUBISZYN, Trydion, mgr inż.

Mechanization of welding works by resistance welding. Przegl spaw 17 no.4:81-84 Ap '65.

1. Welding Institute, Gliwice.

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MICHALSKI, Ryszard, mgr inz.

Properties of frictionally welded joints. Przegl spaw 16 no.9: 221-223 S'64

1. Welding Institute, Gliwice.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

MICHALSKI, Maksymilian, inz.

Estrich gypsum a new building material. Przegl kolej drog 14 no.5 86-89 My '62

1. Dyrekcja Okregowa Kolei Panstwowych, Szczecin.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

MICHALSKI, Maksymilian, inz.

Colorful painting of workshops and production installations.
Przegl kolej mechan 13 no.8:239-241 Ag '61.

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TYSAROWSKI, W.; MICHALSKI, M.; KLECZOWSKA, H.

Polarographic method of determination of oxygen in oxyhemoglobin. Polski tygod. lek. 7 no. 45:1453-1461 10 Nov 1952. (CLML 24:1)

1. Of the Department of Biochemistry of the Institute of Tuberculosis (Director--Prof. Janina Misiewicz, M.D.)

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TYSAROWSKI, W.; MICHAISKI, M.; KLECZKOWSKA, M.

Polarographic method of determination of oxygen combined with hemoglobin and of blood oxygen capacity. Acta physiol. polon. 3 Suppl. 3: 253-254 1952. (CIML 24:1)

1. Of the Department of Biochemistry (Head--Bagdasarian, M.D.) of the Institute of Tuberculosis in Warsaw.

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MICHALSKI, M.

The excitation of sonic and ultrasonic oscillations in electrolytes. B. Klarner, M. Michalski, and S. Woszczerowicz. *Bull. acad. polon. sci. Sér. sci. tech.* 6, 107-10(1958) (In English).—Hg electrodes in *N* H_2SO_4 were vibrating under the action of elec. n.c., 0.5-2 amp., a few v., and a frequency of 50-20000 Hertz. The mech. frequency was close to the elec. frequency, especially at lower values. H_2O_2 is produced but at lower frequencies. J. Stecki

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3

CA

The "interrupted arc" as a source of light in spectral analysis. W. Kemula and M. Michalski. *Przemysl Chem.* 6(29), 282–8(1950).—The various systems of the "interrupted arc" are described. The wire diagram described by Pfeilsticker (*Z. Elektrochem.* 43, 719(1937); *Z. Metallkunde* 30, 211(1938)) is improved upon to give greater intensity and stability of discharge. The possibility of detecting the spectra of As, P, and C are thus increased.
Frank Gonet

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P.T.A.

Chemistry & Chemical Technology

7

323 535.337 : 545.82 : 681.2

Kemula W. and Michalski M. Schematic Arrangements of the „Interrupted Arc" as a Source of Emission in Spectral Analysis.

„Schematy urządzeń „łuku przerywanego" jako źródła emisji w analizie spektralnej". Przemysł Chemiczny. No 5, 1950, pp 282—288, 5 figs.

Advantages of the „interrupted arc" are emphasized in comparison with other methods of exciting the emission of characteristic radiation in spectral analysis. Testing and improving the method applied by Pfeilsticker led to the construction of an installation nourished only by alternating current (needing no current switches), by means of which 100 separate discharges per sec. between the electrodes were obtained. The advantages of this installation consist in: greater intensity of discharges, increasing the sensibility of detecting elements with characteristic spark spectra, such as arsenium, phosphorus, carbon etc. There is also a possibility of quantitative spectral analysis. Schematic drawings of installations are included

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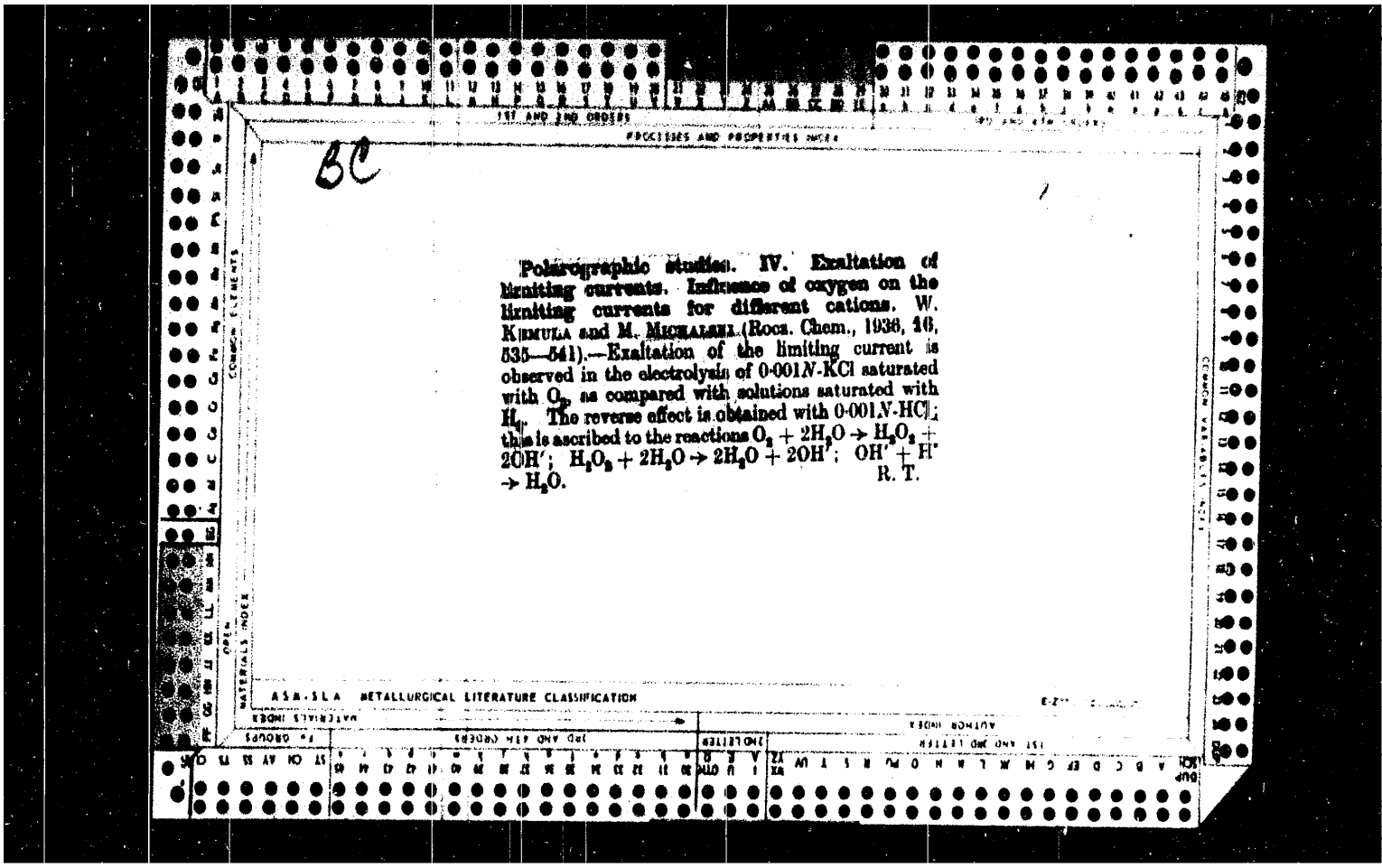

BC

Polarographic studies. IV. Exaltation of limiting currents. Influence of oxygen on the limiting currents for different cations. W. KEMULA and M. MICHALSKI. (Roczn. Chem., 1936, 16, 535—541).—Exaltation of the limiting current is observed in the electrolysis of 0·001*N*-KCl saturated with O_2, as compared with solutions saturated with H_2. The reverse effect is obtained with 0·001*N*-HCl; this is ascribed to the reactions $O_2 + 2H_2O \rightarrow H_2O_2 + 2OH'$; $H_2O_2 + 2H_2O \rightarrow 2H_2O + 2OH'$; $OH' + H' \rightarrow H_2O$. R. T.

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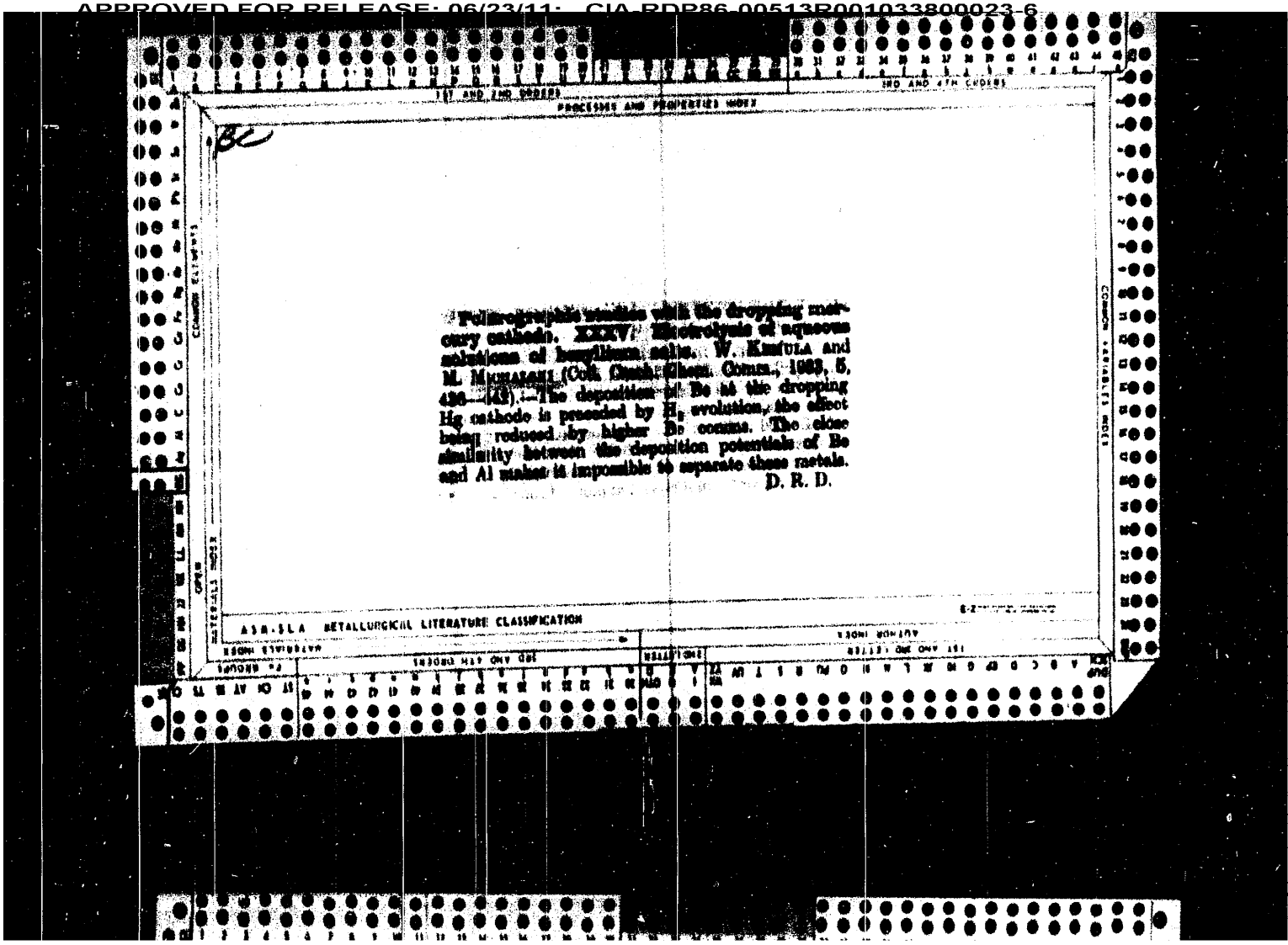

Polarographic studies with the dropping mercury cathode. XXXV. Electrolysis of aqueous solutions of beryllium salts. W. Kemula and M. Michałski (Coll. Czech. Chem. Comm., 1938, 5, 496—515).—The deposition of Be at the dropping Hg cathode is preceded by H_2 evolution, the effect being reduced by higher Be conens. The close similarity between the deposition potentials of Be and Al makes it impossible to separate these metals.

D. R. D.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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Untapped sources of coal economy. p.267
(PRZEGLAD KOLEJOWY DROGOWY, Vol. 8, No. 12, Dec. 1956, Warsaw, Poland)

SO: Monthly List of East European Accessions (EEA) LC, Vol. 6, No.9, Sept. 1957, Uncl.

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MICHALSKI, M.

Floors from ambalithe materials. p. 144.

PRZEGLAD [illegible]. (Sydawnictwa Komunikacyjne) Warszawa, Poland.
Vol. 10, no. 6, June 1958.

Monthly List of East European Accessions (EEAI), LC, Vol. [illegible], no. [illegible], Aug. [illegible].

Uncl.

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MICHALSKI, Ludwik, dr inz.

Precise temperature control of electric resistance furnaces.
Przegl mech 22 no.3:81-82 10 F '63.

1. Politechnika, Lodz.

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MICHALSKI, Ludwik, dr., inz.

Measurement of the surface temperature of rotating cylinders. Ciepl masz przeplyw no. 39/40:61-73. '62

1. Katedra Grzejnictwa Elektrycznego, Politechnika, Lodz.

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MICHALSKI, Ludwik

Work of an electric furnace in case of impressed frequency of the coupling of the heating power. Elektryka Lodz no.10: 81-95 '62.

1. Katedra Grzejnictwa Elektrycznego, Politechnika, Lodz.

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MICHALSKI, Ludwik, dr inz.

Temperature measurements of the surface of rotating cylinders.
Pomiary 8 no.9:407-410 S '62.

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MICHALSKI, L

POLAND/Atomic and Molecular Physics - Heat D-6

Abs Jour : Ref Zhur - Fizika, No 4, 1959, No 5445

Author : Michalski Ludwik
Inst : -
Title : Measurement of the Temperature of Metals in the Liquid State

Orig Pub : Pomiary, automat., kontrola, 1958, 4, No 5-6, 238-243

Abstract : Survey article on the measuring methods and devices, read at the Conference on Precision Mechanics and Measurement Technology in Warsaw, June 1958.

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Michalski, Ludivich

POLAND/Optics - Physical Optics K-5

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12980

Author : Michalski Ludivich
Inst :
Title : Optical Measurements of Surface Temperatures of Solids Below 700°.

Orig Pub : Pomiary, automat., kontrola, 1956, 2, No 9, 342-346

Abstract : No abstract.

Card 1/1

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

MICHAELI, L.

"Different Chapter of Instrument Flight", A. ZSU, (Title not fully translated)
TYDENI ZSU, Vol. 14, No. 9, September 1954, Warsaw, (Czech)

SO: Monthly List of East European Accessions (EEAL), LC, Vol. 4, No. 3, March 1955, Unclas.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

MICHALSKI, L.

"Laboratory Indexes for Life Long Discharges", P. 164, (GAZETA [illegible]
ENERGETYCZNA, Vol. 37, No. 5, September 1954, Warsaw, Poland)

SO: Monthly List of East European Accessions (EEAL), LC, Vol. 4, No. 3, March 1955, Uncl.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

MICHALSKI, L.

[illegible], Inst[illegible], [illegible] Polish Scientific [illegible],
p. 201, ([illegible] Vol. IV, No. [illegible],
Warsaw, Poland)

SO: Monthly List of East European Accessions (EEAI), LC, Vol. 4, No. [illegible],
March 1955, Uncl.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

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M. CHUCHI, L.

"Resistance Thermometers in a Logarithmic System", p. 173, (CHRONIKA ELEKTROTECHNICZNA, Vol. 14, No. 8, August 1954, Warsaw, Poland)

SO: Monthly List of East European Accessions (EEAI), LC, Vol. 4, No. 3, March 1955, Uncl.

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[illegible]I, L.

"Rod [illegible]ature Regulators", [illegible], (Mikroprzewodnik [illegible]), No. 1, January [illegible], Warsaw, Poland)

SO: Monthly List of East European Accessions (EEAI), LC, Vol. 4, No. 3, March 1955, Uncl.

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MICHNIEWICZ, M.; MICHALSKI, L.

Changes in the level of growth regulators in leaves and reproductive organs of the radish Raphanus sativus L. in its different stages of development. Acta agrobotanica 9 no.2:99-111 '60.

1. Zaklad Fizjologii Roslin, Uniwersytet Mikolaja Kopernika, Torun.

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MICHALSKI, Leszek

Electrophoresis of plant regulators in agar plates. Nauki matem przyrod Torun no.6:89-95 '60.

1. Zaklad Fizjologii Roslin, Uniwersytet im. M. Kopernika, Torun.

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MICHALSKI, Leszek

Changes in plant growth regulators in the generative organs of yellow lupine in different stages of development. Nauki matem przyrod Torun no.6:73-81 '60.

1. Zaklad Fizjologii Roslin, Uniwersytet im. M. Kopernika, Torun.

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MICHALSKI, Leszek; CHROMINSKI, Andrzej

Bioautographic analysis of growth regulators in hazel (Corylus avellana L.) germinating pollen. Nauki matem przyrod Torun no.6:65-71 '60.

1. Zaklad Fizjologii Roslin, Uniwersytet im. M. Kopernika, Torun, i Pracownia Fizjologii Roslin, Osrodek Badawczy Biologii Stosowanej Uniwersytetu im M. Kopernika w Toruniu w Piwincach, pow Torun.

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MICHALSKI, Konrad, mgr. inz.

"Coatings from plastics" by Zbigniew Kowalski. Reviewed by Konrad Michalski. Mechanik 35 no.5:304 My '62.

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MICHALSKI, Konrad, mgr inz.

Molding-pressing of parts from thermohardening plastics. Mechanik 34 no.8:411-413 '61.

1. PRIS, Warszawa.

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MICHALSKI, Konrad, Mgr.inz.

New synthetic materials and their use in plain bearings. Techn motor 11 no.8:274-278 Ag '61.

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MICHALSKI, K., PETRYKOWSKI, A.

The use of plastics in the construction of machinery. (Conclusion)
p. 434

MECHANIK Warszawa, Poland Vol. 32, no. 8, Aug. 1959

Monthly List of East European Accessions (EEAI) LC, Vol. 9, no. 2,
Feb. 1960
Uncl.

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POLAND/Chemical Technology - Synthetic Polymers. Plastics. H-29

Abs Jour : Ref Zhur - Khimiya, No 24, 1958, 83531

Author : Michalski, K.
Inst : -
Title : The Polyester Glass Plastics as a Construction Material.

Orig Pub : Techn. motoryczn., 1958, 8, No 1, 8-12.

Abstract : A review of the properties and the application of glass plastics reinforced with glass fibers and glass mats.

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MICHALSKI, K.

The use of polyesters for the construction of motorcar bodies.

p. 360 (Technika Motoryzacyjna) Vol. 7, no. 10, Oct. 1957, Warszawa, Poland

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC, VOL. 7, NO. 1, JAN. 1958

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WESOLOWSKI, Jan; GASIAR, Stanislaw; MICHALSKI, Kazimierz; STEPNIEWSKI, Waldemar

Measurement of alph-ray radioactivity in the atmosphere over some localities in the Low Silesia district. Nukleonika 6 no.12:801-812 '61.

1. Uniwersytet Wroclawski we Wroclawiu, Katedra Fizyki Doswiadczlnej. Akademia Medyczna we Wroclawiu, Katedra Fizyki.

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SWIRSKA, Alicja; MICHALSKI, Kazimierz

Furan derivatives of 3-amino-2-oxazolidinone. Acta pol. pharm. 19 no.5:459-460 '62.

1. Z Instytutu Farmaceutycznego w Warszawie.
(OXAZOLES) (FURANS)

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MICHALSKI, K.

Examination of contaminated water and bacteriology. p. 221.

GAZ, WODA I TECHNIKA SANITARNA. (Stowarzyszenie Naukowo-Techniczne Inzynierow i Technikow Sanitarnych, Ogrzewnictwa i Gazownictwa) Warszawa, Poland. Vol. 32, no. 6, June 1958.

Monthly list of East European Accession (EEAI) LC, Vol. 9, no. 2, Feb. 1960

Uncl.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800023-6

POLAND/Chemical Technology - Chemical Products and Their Application - Water Treatment, Sewage Water. H.

Abs Jour : Ref Zhur - Khimiya, No 9, 1958, 29214

Author : Michalski, K.
Inst :
Title : The Analysis of Poluted Surface Waters.

Orig Pub : Gaz-Woda-Techn sanit, 31, No 6, 217-218 (1957) (in Polish)

Abstract : No abstract.

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MICHALSKI, K.

Protection of sugar beets from aphids. p. 60.

GAZETA CUKROWNICZA. (Stowarzyszenia Naukowo-Techniczne Inzynierow i Techników Przemyslu Rolnego i Spozywczego i Centralny Zarzad Przemyslu Cukrowniczego) Warszawa, Poland. Vol. 61, no. 2, Feb. 1959

Monthly List of East European Accession (EEAI) LC, Vol. 8, no. 7, July 1959

Uncl.

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MICHALSKI, K.

MICHALSKI, K. Development of a base for the raw plant materials of the food industry during the period of 1956-1960, p. 228

Vol. 10, no. 6, June, 1956
PRZEMYSL SPOZYWCZY
TECHNOLOGY
Warsaw, Poland

So. East Accession Vol. 6, no. 2, Feb. 1957

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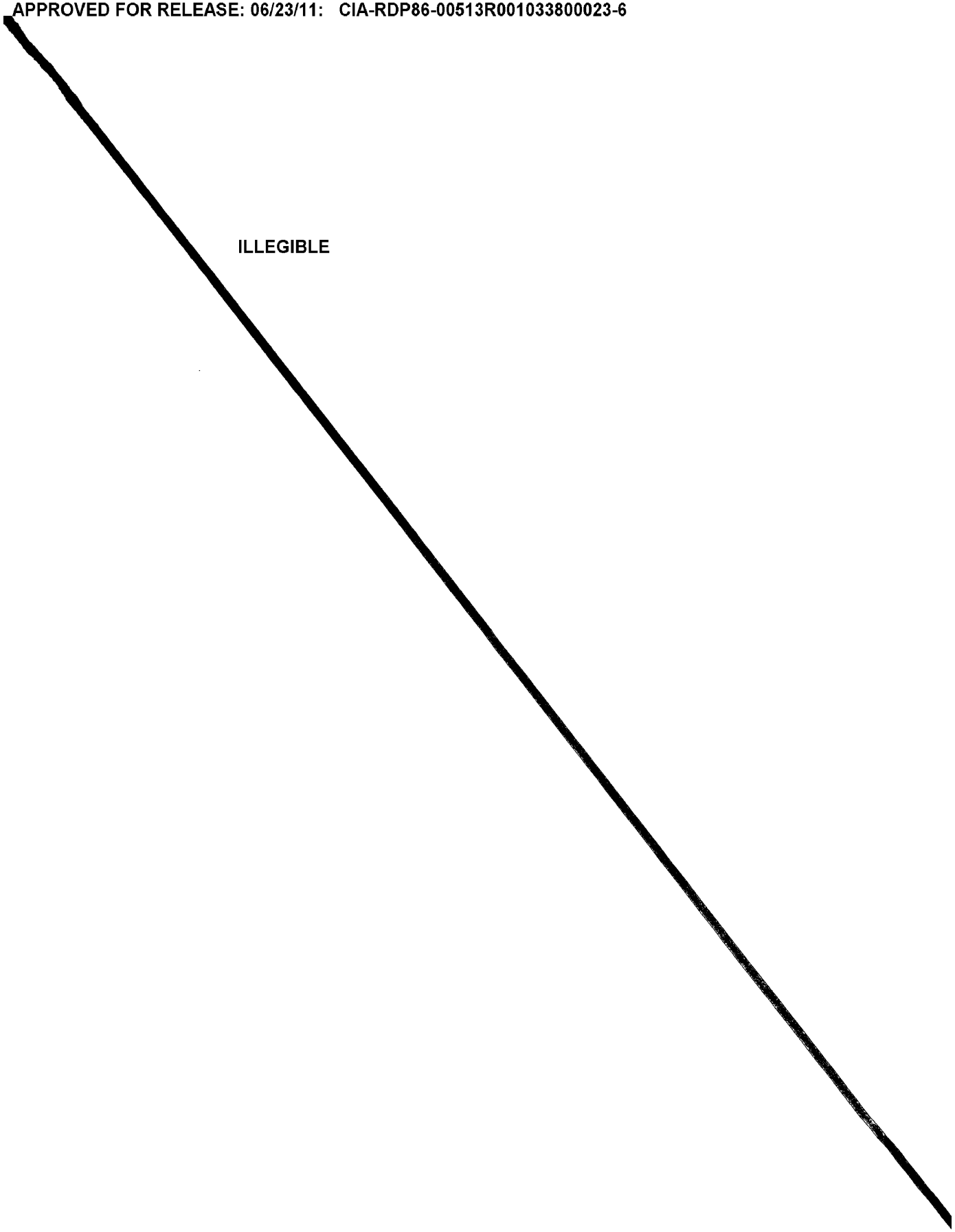

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MICHALSKI, Jerzy

Adsorption of carbon disulfide on Norite charcoal in the presence of water vapor and air. Józef Chrząszczewski, Mieczysław Wroński, and Jerzy Michalski (Univ. Łódź, Poland). *Zeszyty. Nauk. Uniw. Łódz., Ser. II, Nauki Mat.-Przyrod.* No. 3, 139–43(1957)(English and Russian summaries).—Adsorption of air by active C is notably reduced by moisture. The max. amt. of CS_2 adsorbed is but slightly diminished and not affected by the presence of air. J. S.

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BOCHWIC, Boleslaw; MICHALSKI, Jan

Osman Achmatowicz. Nauka polska 12 no.4:62-65 Jl-Ag '64.

1. Member of Polish Academy of Sciences, Warsaw (for Michalski).

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MICHALSKI, Jan; KOURO, Tomasz

On the action of hydrogen sulfide on tetraethyl esters of phosphorous phosphoric anhydride $(C_2H_5O)_2P-O-P(OC_2H_5)_2$.
Pt. 1. Rocz chemii 38 no. 2:163-164 '64.

1. Institute of Organic Synthesis, Polish Academy of Sciences, Lodz.

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MARUSZEWSKA-WIECZORKOWSKA, Elzbieta; MICHALSKI, Jan

Anhydrides of organophosphorus acids. Pt. 5. Rocz chemii 37 no. 12:1579-1588 '63.

1. Department of Organic Chemistry, Technical University, Lodz.

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MICHALSKI, Jan; PLISZKA-KRAWIECKA, Bozena; SKOWRONSKA, Aleksandra

Organophosphorus derivatives of sulfur and selenium. Pt.26.
Rocz chemii 37 no.11:1479-1487 '63.

1. Institute of Organic Synthesis, Polish Academy of Sciences, Lodz.

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MICHALSKI, Jan; TULIMOWSKI, Zdzislaw

Organophosphorus compounds of sulfur and selenium. Pt.24.
Rocz chemii 36 no.12:1781-1785 '63.

1. Department of Organic Chemistry, Technical University, Lodz.

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MICHALSKI, J.; MIKOLAJCZYK, M.; MLOTKOWSKA, B.; SKOWRONSKA, A.

Formation of tetraalkylthionopyrophosphates through isomerization of their thiolo-isomers. Bul chim PAN 11 no.12:695-697 '63.

1. Department of Organic Chemistry, Technical University, Lodz and Institute of Organic Synthesis, Polish Academy of Sciences. Presented by J. Michalski.

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BEDNAREK, P.; BODALSKI, R.; MICHALSKI, J.; MOSIEROWICZ, S.

Alkyl-and alkenyl- pyridines. Pt. 8. Bul chim PAN 11 no.9: 507-511 '63.

1. Institute of Organic Synthesis, Lodz Branch, Polish Academy of Sciences.

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MICHALSKI, Jan; MUSIEROWICZ, Stanislaw

Organophosphorus derivatives of sulfur and selenium. Pt. 23.
Rocz chemii 36 no.11:1655-1659 '62.

1. Department of Org[illegible] Chemistry, Technical University, Lodz.

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MICHALSKI, Jan; RATAJCZAK, Aleksander

Organophosphorus compounds of sulfur and selenium. Pt. 20.
Rocz chemii 36 no.5:911-919 '62.

1. Department of Organic Chemistry, Institute of Technology, Lodz.

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MICHALSKI, Jan; RATAJCZAK, Aleksander

Organophosphorus compounds of sulfur and selenium. Pt. 21.
Rocz chemii 36 no.4:775-776 '62.

1. Department of Organic Chemistry, Technical University, Lodz.

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MICHALSKI, Jan; ZWIERZAK, Andrzej

Derivatives of hypophosphoric acid. Pt. 2. The synthesis of tetraalkyl dithiohypophosphates. Rocz chemii 36 no.3:489-495 '62.

1. Department of Organic Chemistry, Institute of Technology, Lodz.

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MICHALSKI, Jan; MODRO, Tomasz

Derivatives of hypophosphoric acid. Pt. 1. The synthesis of tetraalkyl hypophosphates. Rocz chemii 36 no.3:483-488 '62.

1. Department of Organic Chemistry, Institute of Technology, Lodz, and Institute of Organic Synthesis, Polish Academy of Sciences, Lodz.

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26.5%, b.p. 36-37°C/0.005 mm. 0.075 C_4H_9OH and 0.075 mole of 2,6-lutidine in 10 ml C_6H_6 are added to 0.075 mole of II (R = C_2H_5) in 10 ml C_6H_6 in the course of 5 min; after 1 hr (50°C) and 12 hrs (20°C) 10 ml water is added, which has been acidified with 2 drops of concentrated HCl; Ia is obtained from the benzene layer, yield 50.5%, b.p. 63-64°C/1 mm. Ib is obtained analogously with a yield of 52% from 0.075 mole of II (R = C_2H_5) and 0.075 mole of $C_6H_{11}OH$ in the presence of 0.075 mole of 2,6-lutidine in C_6H_6. For communication II see RZhKhim, 1962, 18Zh264. [Abstracter's note: Complete translation.]

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the course of 15 min to 0.25 mole ground IV in 100 ml C_6H_6 at 40-50°C; after 30 min (40-50°C) 0.25 mole of R'OH is gradually added to cool the mixture to 20°C, the mixture is stirred for 1 hr at 40-50°C and cooled, then 0.25 mole NaOH in 75 ml water is added dropwise, and I is extracted with benzene (R, R', yield in %, b.p. in °C/mm and n_D^{20} are given): C_2H_5, C_4H_9 (Ia), 57, 102-102.5/19, 1.4163; C_2H_5, iso-C_3H_7, 31, 40-41/1, 1.4091; C_2H_5, $C_6H_5CH_2$, 51, 85-86/0.03, 1.4920; C_2H_5, CH_2=$CHCH_2$, 49, 55-56/1.5, 1.4279; C_2H_5, C_3H_7, 51, 51-52/1, 1.4137; C_2H_5, cyclo-C_6H_{11} (Ib), 49, 52-53/0.005, 1.4472; C_2H_5, tert-C_4H_9, 42, 28-29/0.03 (unstable even at 20°C), 1.4149; iso-C_3H_7, C_4H_9, 61, 35-35.5/0.02, 1.4164; iso-C_3H_7, CH_2=$CHCH_2$, 44, 36-37/0.04, 1.4274; C_4H_9, cyclo-C_6H_{11}, 53, 72-73/0.01, 1.4522; C_4H_9, CH_2=$CHCH_2$, 48, 48-49/0.02, 1.4332; C_3H_7, C_4H_9, 48.5, 39.5-40/0.005, 1.4199. 0.05 mole of II (R = C_2H_5) is mixed with 0.05 mole of C_4H_9OH at 20°C and Ia is separated after 1 hr (20°C), yield

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S/081/63/000/001/042/061
B144/B186

5.3630

AUTHORS: Michalski, Jan, Zwierzak, Andrzej

TITLE: Anhydrides of organophosphorus acids. Part III. Reaction of O-alkyl phosphorous and O,O-diethyl phosphoric anhydrides with alcohols. A new way of obtaining mixed dialkyl phosphites

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 1, 1963, 256, abstract 1Zh238 (Roczn. chem., v. 36, no. 1, 1962, 97-102 [Eng.; summaries in Pol. and Russ.])

TEXT: A method has been developed for synthesizing RO(R'O)PHO (I) by alcoholysis of non-purified $(C_2H_5O)_2P(O)OP(O)(H)OR$ (II) obtained from $(C_2H_5O)_2POCl$ (III) and $ROP(O)(H)ONa$ (IV). Hydrolysis of $(RO)_2PHO$ by the equimolar quantity of NaOH in 50% alcohol yields IV (R, yield in % and b.p. in °C are given): C_2H_5, 95, 182-183; C_3H_7, 98, 191-193; iso-C_3H_7, 97, 128-130; C_4H_9, 93, 175-177. 0.25 mole of III is added dropwise in

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is separated out by acidifying an aqueous solution with a 10% HCl solution, yield 86.5%, m.p. 94-95°C. The following were produced in the same way: III ($R' = R'' = CH_3$), yield 50%, b.p. 94-95°C/25 mm, $n^{16}D$ 1.4850, $(CH_3)_2C{=}CHSO_2NHC_6H_5$, yield 67%, m.p. 70-71°C, and III ($R' = H$, $R'' = C_6H_5$) (IIIb), yield 74%, b.p. 84-85°C/0.1 mm, $n^{21}D$ 1.5635. A solution of 0.1 moles $CH_3(C_4H_9)_2N$ in 50 ml C_6H_6 is added a drop at a time, stirring and cooling (15 - 20°C), to a solution of 0.1 moles IIIb in 150 ml C_6H_6, the yield of IV ($R' = H$, $R'' = C_6H_5$) (IVa) is 83%. $C_6H_5CH{=}CHSO_2NHC_6H_5$ was produced at a yield of 93% from 0.05 moles IVa and 0.1 moles $C_6H_5NH_2$ in C_6H_6 (~20°C, 1 hr). For part XVIII see RZhKhim, 1962, 24Zh471.

[Abstracter's note: Complete translation.]

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B166/B138

Organophosphorus derivatives of ...

separated by distillation. The following data are given for II, R, R', R", yield %, b.p. in °C/mm, nD (temp. in °C): CH_3, H, CH_3, 84, 68/0.01, 1.4840 (20); C_2H_5, H, CH_3 (IIa), 74, 60/0.02, 1.4818 (20); n-C_4H_9, H, CH_3, 58, 90/0.01, 1.4712 (20); CH_3, CH_3, CH_3, 95.5, 67/0.05, 1.4818 (25); C_2H_5, CH_3, CH_3, 73, 73/0.05, 1.4755 (25); n-C_4H_9, CH_3, CH_3, 73.2, 103/0.01, 1.4699 (25); CH_3, H, C_6H_5, 82, 95/0.02, 1.5459 (25); C_2H_5, H, C_6H_5, 85, 105/0.01, 1.5292 (20). Cl_2 is bubbled into a suspension of 56 g IIa in 0.2 l water, stirring thoroughly and cooling (30°C) until saturation is reached, excess chlorine is blown off with air and III (R' = H, R" = CH_3) (IIIa) are extracted with C_6H_6 (4 × 50 ml), yield 80%, b.p. 90-91°C/15 mm, $n^{23}D$ 1.4859. 0.15 moles $C_6H_5NH_2$ are added to a solution of 0.05 moles IIIa in 50 ml C_6H_6, after 5 hrs (~20°C) the sediment is separated, the solvent is removed under vacuum, the residue is dissolved in 100 ml 2 N NaOH, extracted with ether and $CH_3CH{=}CHSO_2NHC_6H_5$

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15380
S/081/63/000/002/027/088
B166/B138

50630

AUTHORS: Borecka, Barbara, Kapecka, Teresa, Michalski, Jan

TITLE: Organophosphorus derivatives of sulfur and selenium. Part XIX. Addition of diethyl-S-chlorothiophosphates $(RO)_2P(O)SCl$ to unsymmetrical ethylenic hydrocarbons

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1963, 236-237, abstract 2Zh226 (Roczn. chem., v. 36, no. 1, 1962, 87-95 [Eng.; summaries in Pol. and Russ.])

TEXT: When $(RO)_2P(O)SCl$ (I) are added to $CH_2=CR'R''$ according to Markovnikov's law $(RO)_2P(O)SCH_2C(Cl)R'R''$ (II) are formed. By chorinating II in the presence of water $R'R''CClCH_2SO_2Cl$ (III) were produced and these were converted into $R'R''CH=CHSO_2Cl$ (IV). In the standard test a stream of dry propylene is passed into a solution of 0.1 mole I ($R = C_2H_5$) in 30 ml C_6H_6, stirring and cooling well (20-30°C) until the yellow tint of I disappears; the solvent is distilled off under vacuum and II is

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MICHALSKI, J.; PLISZKA, B.

Reactions of dialkoxyoxophosphoranesulphenyl chlorides $(RO)_2P(O)SCl$ with tetraalkyl esters of phosphorous phosphoric anhydride $(R'O)_2P-O-P(O)(OR'')_2$. Synthesis of isomeric tetraalkyl thiopyrophosphates. Bul chim. PAN 10 no.6:267-269 '62.

1. Institute of Organic Synthesis, Polish Academy of Sciences, Warsaw, and Department of Organic Chemistry, Technical University, Lodz. Presented by O. Achmatowicz.

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MICHALSKI, J.; WOJACZYNSKI, K.; ZAJAC, H.

On the mechanism of formation of 3-(2'-pyridyl)-pyrrocoline from some 1,3-di-(2'-pyridyl)-propane derivatives. Bul chim PAN 9 no.6:401-404 '61.

1. Department of Organic Chemistry, Technical University, Lodz. Presented by O. Achmatowicz.

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S/081/63/000/002/056/088
B171/B102

Preparation of tetraalkyl ...

yield and the quality of I deteriorate. A 0.275 mole solution of NOCl in 100 ml of C_6H_6 at 25-30°C is poured during 30 min into a solution of 0.25 mole of II (R= C_2H_5) and of 0.25 mole of III in 150 ml of ligroin. The hydrochloride of III is separated, the solvents eliminated by vacuum distillation and 30.2 g (83%) of I (R= C_2H_5) are obtained. This compound has a boiling point at 88-89°C/ 0.01 mm and $n^{25}D$= 1.4179. In another case, a solution of 0.1 mole of NOCl in 50 ml of C_6H_6 at a temperature $\leqslant$ 25°C is poured during 20 min into a stirred solution of 0.1 mole of unrefined II (R= $C_6H_5CH_2$) and of 0.1 mole of III in 100 ml of C_6H_6. The hydrochloride of III is filtered out, C_6H_6 is eliminated in vacuo. The residue is washed with 50 ml of water and 50 ml of a dilute solution of NH_3 until pH=8. After several minutes the oil crystallizes. The product is filtered out, recrystallized and I [(R= $C_6H_5CH_2)_2$, melting point 60-61.5°C)] is obtained with a yield of 75%. (from benzene-cyclohexane)
[Abstracter's note: Complete translation.]

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S/081/63/000/002/056/088
B171/B102

AUTHORS: Michalski, Jan, Zwierzak, Andrzej

TITLE: Preparation of tetraalkyl pyrophosphates

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1963, 405, abstract 2N45 (Polish patent 45271, Oct. 16, 1961)

TEXT: Tetraalkyl pyrophosphates represented by the formula $R_4P_2O_7$ (I), where R= alkyl, are prepared by a reaction of dialkyl phosphites R_2HPO_3 (II) with NOCl in the presence of HCl-fixing substances, such as pyridine (III) or without them. A solution of 1-1.5 mole of NOCl in C_6H_6 is added drop by drop at 20-35°C to a solution of 1 mole of II and 1 mole of III in ligroin or in C_6H_6, vigorously stirred and periodically water-cooled. The hydrochloride of III is filtered out and the solvent is then eliminated by vacuum distillation. Very pure I is thus prepared with a yield of 80-90% in respect to II. I may be produced by the action of NOCl on II without the use of amine to fix HCl, but in that case the

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FIZER, Bernard; MICHALSKI, Jan

Organophosphorous compounds with active methylene group. III. Addition of phosphinylacetic esters and their analogs to α,β-unsaturated ethylenic derivatives. Rocz chemii 34 no.5:1461-1464 '60.
(EEAI 10:9)

1. Department of Organic Chemistry, Institute of Technology, Lodz.

(Methylene group) (Phosphorus) (Esters)
(Ethylene)

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MICHALSKI, Jan; SKOWRONSKA, Aleksandra

Organophosphorus compounds of sulfur and selenium. XVI. Dialkyl- and alkylarylthiopyrophosphinates RR'P(S)OP(O)RR'. Action of hydrogen sulfide on dialkyl- and alkylarylphosphinic chlorides. Rocz chemii 34 no.5:1381-1385 '60. (EEAI 10:9)

1. Institute of Organic Synthesis, Polish Academy of Science, Lodz, and Department of Organic Chemistry, Institute of Technology, Lodz.

(Sulfur) (Selenium) (Hydrogen sulfide)
(Phosphorus chlorides) (Organic compounds)
(Alkyl groups) (Aryl groups) (Phosphorus)
(Pyrophosphoric acid)

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MICHALSKI, J.; WOJACZYNSKI, K.; ZAJAC, H.

Reaction between N,N' dioxide of 1,3-di-(2'-pyridyl)-propane and acetic anhydride. Bul chim PAN 8 no.6:285-289 '60.
(EEAI 10:9/10)

1. Department of Organic Chemistry, Institute of Technology, Lodz.

(Nitrogen oxides) (Pyridinum compounds)
(Propane) (Anhydrides)

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BODALSKI, R.; MICHALSKI, J.

Studies on the synthesis of divinylpyridines. Reaction between sym - collidine and formaldehyde. Bul chim PAN 8 no.5:217-218 '60.
(EEAI 10:9/10)

1. Department of Organic Chemistry, Technical University, Lodz and Department of Organic Synthesis, Lodz, Polish Academy of Sciences. Presented by O. Achmatowicz.

(Divinyl pyridine) (Collidine) (Formaldehyde)

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Distr: 4E2c(j)/4E3d

1 1

/ Organophosphorus compounds of sulfur and selenium. XV. Reactions of organic thiosulfonates with trialkyl phosphites and dialkyl phosphites. Jan Michalski, T. Modro, and J. Wieczorkowski (Inst. Technol., Lodz, Poland). *J. Chem. Soc.* 1960, 1665–70; cf. *CA* 54, 14095d. —BuS_2O_2Et (I) (27.3 g.) treated with 37.5 g. $(BuO)_3P$ at 20–5° gave 24 g. BuSOOBu, $b_{0.3}$ 52–4°, n_D^{25} 1.4444, and 33.7 g. *O,O*-dibutyl *S*-ethyl phosphorothiolate (II), $b_{0.1}$ 87–9°, n_D^{25} 1.4524°. Similarly, 36.4 g. I with 33.2 g. $(EtO)_3P$ gave 13.6 g. mixt. 83% BuSOOEt and 17% *O,O,S*-triethyl phosphorothiolate (III), 16.2 g. III, b_{12} 115°, n_D^{25} 1.4572, and 2.1 g. $BuSO_2Et$, m. 49–50°. PhS_2O_2Et (IV) (20.3 g.) with 16.6 g. $(EtO)_3P$ gave 98% III and 74% PhSOOEt obtained as an azeotrope. Similarly, IV with $(BuO)_3P$ gave II and PhSOOBu as the azeotrope, $b_{0.4}$ 95–6°. I with $(PhO)_3P$ gave no reaction. $(EtO)_3P$ (33.2 g.) added to 25 g. PhS_2O_2Ph (V) in 30 ml. C_6H_6 gave 16.8 g. $(EtO)_3P$, b_{12} 101°, 5.0 g. PhSOOEt, $b_{0.4}$ 58°, n_D^{25} 1.5308, 17.5 g. *O,O*-diethyl *S*-phenyl phosphorothiolate (VI), $b_{0.4}$ 87–8°, n_D^{25} 1.5259, and 2 g. $(PhS)_2$, m. 59°. I (27.3 g.) was added to 3.4 g. Na and 20.7 g. $(EtO)_2POH$ in 150 ml. C_6H_6 at 25–30°, then the mixt. extd. with 3 × 50 ml. H_2O. Distn. of the C_6H_6 soln. gave 24.5 g. III. Concn. of the aq. solns. gave 11.6 g. BuSOONa (VII), identified by conversion to *n*-butyl 2,4-dinitrophenyl sulfone, m. 89°. Similarly, I with $(BuO)_3PONa$ gave 80% II and 86% VII, IV with $(EtO)_3PONa$ gave 71% III and 85% $PhSOONa$ (VIII), identified by conversion to phenyl 2,4-dinitrophenyl sulfone, m. 157°, and V with $(EtO)_3PONa$ gave 69% VI and 92% VIII. $(EtO)_3P$ (16.6 g.) refluxed 2 hrs. with 16.4 g. *S*-ethyl sodium thiosulfate (IX) in 70 ml. C_6H_6 gave no reaction. Similarly, IX and $(EtO)_3P$ 2 hrs. at 110–20° gave no reaction. $(EtO)_2PONa$ (0.15 mole) in 100 ml. EtOH added to 24.6 g. IX in 100 ml. EtOH at 20° gave 3.2 g. III. J. A. Giles

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Distr: 4E3d/4E2c(1)

Organophosphorus compounds of sulfur and selenium. XIII. Action of hydrogen sulfide on dialkyl and diaryl phosphorochloridites. New synthesis of dialkyl and diaryl thiophosphites and tetraalkyl thiopyrophosphites. Cz. Krawiecki and J. Michalski (Inst. Technol., Lodz, Poland). *J. Chem. Soc.*, 1960, 881–5; cf. *CA* 50, 10054h; 54, 10832c.—Dialkyl phosphochloridite (0.1 mole) with 0.1 mole tertiary amine in 75 ml. was treated 3 hrs. with H_2S at 5°, the mixt. filtered, and the filtrate distd. to yield dialkyl H thiophosphite (alkyl groups, % yield, b.p./mm., and n_D^{20} given): Et (I), 83, 75–6°/14, 1.4608; Pr (II), 67, 100°/13, 1.4620; and Bu, 76, 81–3°/3, 1.4608; SO_2Cl_2 (4.5 g.) in 10 ml. C_6H_6 added dropwise to 6.0 g. II in 30 ml. C_6H_6 at 5° and the mixt. stirred 1 hr. gave 5.0 g. $(PrO)_2PSCl$, b_{14} 113–14°, n_D^{20} 1.4684. H_2S bubbled through 16.1 g. $(PhO)_2PCl$ and 5.6 g. C_5H_5N in 50 ml. C_6H_6 2.5 hrs., the mixt. filtered, and distd. at 70°/0.001 mm. gave 11.5 g. $(PhO)_2PHS$, (III), n_D^{20} 1.5878, d_{20} 1.2191. SO_2Cl_2 (8.2 g.) in 10 ml. C_6H_6 added to 13.5 g. crude III in 50 ml. C_6H_6 at 0° and the mixt. stirred 1 hr. gave 6.1 g. $(PhO)_2PSCl$, m. 67°. H_2S passed slowly into 20.1 g. ethylene phosphorochloridite and 12.5 g. pyridine in 120 ml. C_6H_6 2.5 hrs. at 5°, the mixt. filtered, and distd. at 55–65°/0.7 mm. gave 12 g. ethylene H thiophosphite, n_D^{15} 1.5401, d_{20} 1.4063. Similarly was obtained trimethylene H thiophosphite, $b_{0.02}$ 60°, m. 34°. 4-$BrC_6H_4CH_2OH$ (15.0 g.) and 17.9 g. $PhNEt_2$ in 75 ml. C_6H_6 added to 5.5 g. PCl_3 in 25 ml. C_6H_6 at 5°, the mixt. stirred 15 min. then satd. with H_2S 5 hrs. at 5° gave 9.0 g. $(4\text{-}BrC_6H_4CH_2O)_2PSCl$, m. 84°. Similarly was obtained 60% $(4\text{-}O_2NC_6H_4CH_2O)_2PSCl$, m. 135°. H_2S (2500 ml.) bubbled into 31.2 g. $(EtO)_2PCl$ (IV) and 20.2 g. Et_3N in 80 ml. C_6H_6 1.5 hrs. at 5° gave 10.5 g. I and 7.5 g. $[(EtO)_2P]_2S$ (V), $b_{0.05}$ 64–5°. IV (16.2 g.) in 20 ml. C_6H_6 added dropwise to 16.0 g. I and 11.0 g. Et_3N in 80 ml. C_6H_6 at 20° and the mixt. stirred 45 min. gave 19.5 g. V. V (10 g.) with 2 drops Et_3N in 40 ml. C_6H_6 satd. 1 hr. with H_2S at 10° gave 8.0 g. I. H_2O (0.3 g.) in 100 ml. Et_2O added to 13.4 g. V and stirred 15 min. gave 9.0 g. mixt. of I and $(EtO)_2POH$. Dry O bubbled through 13.5 g. V in 15 ml. C_6H_6 2.5 hr. at 70–80° gave 4.5 g. $[(EtO)_2P]_2O$, $b_{0.1}$ 86–8°, n_D^{15} 1.4495. **XIV. Reaction of organic diselenides with trialkyl phosphites.** J. Michalski and J. Wieczorkowski. *Ibid.* 885–6.—$(EtO)_2P$ (I), (24.9 g.) added dropwise to 64.8 g. bis(diethoxyphosphinyl) diselenide at 50.5° and the mixt. distd. gave 33.5 g. *O,O,Se*-triethyl phosphoroselenolate, $b_{0.01}$ 39–41°, b_{24} 130–1°, n_D^{15} 1.4768, and 42.2 g. tetraethyl selenopyrophosphate, $b_{0.01}$ 87–8°, n_D^{15} 1.4650. Ph_2Se_2 (39 g.) and 30 g. I heated slowly, then kept at 190–210° 15 min. and distd. gave 22 g. EtSePh, b_5 85–6°, and 27.4 g. *O,O*-diethyl *Se*-Ph phosphoroselenolate, $b_{0.2}$ 100°, n_D^{15} 1.5235.

J. A. Giles

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Dijstr: 4E3d/4E2c(j)

Wolff rearrangement of 1-diazo-3-bromo-ω-phthalimidoalkanes. J. Michalský, M. Holík, and A. Podperová (Masaryk Univ., Brno, Czech.). *Monatsh. Chem.* 90, 814–21(1959); cf. *CA* 53, 21876*e*.—The title compds. were rearranged by Ag_2O in MeOH to the corresponding α,β-unsatd. Me ω-phthalimidoalkenecarboxylates, which added CH_2N_2 to give 2-pyrazolines. Me 4-phthalimidocrotonate (I) (100 mg.), dil. H_2SO_4, and 5 ml. AcOH were heated 1 hr. at 100°; the soln. was then concd. to small vol. *in vacuo* to give 100% 4-phthalimidocrotonic acid (II), m. 194–6° (AcOH). I (400 mg.) was added to an excess of CH_2N_2 in Et_2O and the mixt. kept 20 hrs. to give 385 mg. Me 4-phthalimidomethyl 2-pyrazoline-5-carboxylate (III), m. 164–6° (with evolution of N) (MeOH). I (8 g.), 50 ml. 37% aq. HCl, and 50 ml. AcOH were heated 2 hrs. at 100°; the mixt. was then evapd. to dryness and the residue recrystd. from H_2O to give crude II which was then added during 10 min. to CH_2N_2 in Et_2O. After 30 min. the soln. was filtered and then kept 24 hrs. to give a ppt. of 3 g. III; concn. of the Et_2O mother liquors gave 3.9 g. Me 3-chloro-4-phthalimidobutyrate (IV), m. 94–6° (MeOH). IV (500 mg.) was hydrolyzed with 1:1 37% HCl–AcOH for 1.5 hrs.; evapn. of the mixt. to dryness and recrystn. of the residue from H_2O gave 3-chloro-4-phthalimidobutyric acid, m. 169–70°, which with CH_2N_2 as before gave IV. IV (200 mg.) in 50 ml. MeOH was heated 6 hrs. at 100° with excess freshly pptd. Ag_2O; the mixt. was then decolorized with C, filtered, concd. to 2 ml., and cooled to give I. 2-Bromo-4-phthalimidobutyric acid (4.5 g.) and 50 ml. $SOCl_2$ were refluxed 2 hrs.; the excess $SOCl_2$ was then removed *in vacuo* and the residue was taken up in C_6H_6, added dropwise to CH_2N_2 in Et_2O at −15°, and the mixt. kept 12 hrs. at −10° to give 2.5 g. 1-diazo-3-bromo-5-phthalimidopentan-2-one (V), yellow needles, m. 120° (MeOH). Aq. HBr (40%) was added to 500 mg. V in 10 ml. AcOH until the evolution of N ceased; after 30 min. the mixt. was dild. with 100 ml. H_2O to give 450 mg. 1,3-dibromo-5-phthalimidopentan-2-one, m. 96–7° (MeOH); 200 mg. V with 37% aq. HCl similarly gave 180 mg. 1-chloro-3-bromo-5-phthalimidopentan-2-one, needles, m. 95.5° (MeOH). Freshly pptd. Ag_2O (from 8 g. $AgNO_3$) suspended in MeOH was added to 8 g. V in 150 ml. freshly distd. MeOH; after the initial violent reaction ceased the mixt. was refluxed 10 hrs., decolorized with C, filtered, concd. and cooled to give 4.8 g. Me 5-phthalimidopent-2-enoate (VI), m. 93–4° (MeOH). VI (100 mg.) in 10 ml. EtOH was reduced with H over 50 mg. 5% Pd–$BaSO_4$ at room temp. and 1 atm.; the mixt. was then filtered and evapd. to dryness and the residue recrystd. from a little MeOH to give Me 5-phthalimidovalerate (VII), m. 42–3°. Ag_2O (from 4 g. $AgNO_3$) was added to 10 g. 1-diazo-5-phthalimidopentan-2-one in 150 ml. MeOH and the mixt. heated 5 hrs. at 80° and then worked up as before to give 9 g. VII. VI (2.8 g.) and 1:1 37% aq. HCl were heated 1 hr. at 100°; the mixt. was then evapd. to dryness and the residue recrystd. from H_2O to give 2.5 g. 5-phthalimidopent-2-enoic acid (VIII), m. 202–3° (in a sealed tube). VIII (200 mg.) and excess CH_2N_2 in Et_2O were kept 12 hrs. at room temp.; the mixt. was then filtered and concd. to give 190 mg. Me 4-(2-phthalimidoethyl)-2-pyrazoline-5-carboxylate, m. 118–21° (with evolution of N) (MeOH). The following homologs of these compds. were similarly prepd. (compd., % yield, m.p., recrystn. medium given): 1-diazo-3-bromo-6-phthalimidohexan-2-one, 82.4, 103–4°, MeOH; 1,3-dibromo-6-phthalimidohexan-2-one, 93.4, 99–102°, MeOH; 1-chloro-3-bromo-6-phthalimidohexan-2-one, 68.3, 111–12°, MeOH; Me 6-phthalimido-2-hexenoate, 55.1, 85–8°, MeOH; Me 6-phthalimidovalerate, —, 45–6°, MeOH; 6-phthalimido-2-hexenoic acid, 88, 153–5°, H_2O.

M. L. Burstall

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MICHALSKI, J.

Distr: 4E3d/4E2c(j) 1

Reaction of dialkoxyoxophosphoranesulfenyl chlorides with enol ethers and esters. J. Michalski and St. Musierowicz (Tech. Univ., Lodz, Poland). *Chem. & Ind.* (London) 1959, 585.—Reactions of dialkoxyoxophosphoranesulfenyl chlorides with enol ethers and esters are shown to give ethers or esters of α-chloroalcohols. $(EtO)_2P(O)SCl$ (I) is treated with CH_2:CHOEt in C_6H_6 below 5° to yield $(EtO)_2P(O)SCH_2CEt(OH)Cl$ (II) (95%), which with water gives $(EtO)_2P(O)SCH_2CHO$ (III) (50%), $b_{0.04}$ 82°, $n^{25}D$ 1.4708 (semicarbazone m. 160°). Treatment of II with excess EtOH gives $(EtO)_2P(O)SCH_2CH(OEt)_2$ (IV) (75%), $b_{0.05}$ 80°, $n^{25}D$ 1.4531, degraded by alkali to mercaptoacetaldehyde diethyl acetal, b_{21} 72–3°, $n^{25}D$ 1.4409 (m.p. and mixed m.p. of 2,4-dinitrophenyl thioether 56°) (Parham, *et al.*, *C.A.* 48, 4548*d*; Hesse and Jorder, *C.A.* 47, 9975*h*). Acid hydrolysis of IV yields III (60%). Condensation of Na mercaptoacetal with diethyl phosphorochloridate also yields IV (60%), $b_{0.03}$ 81–2°, $n^{25}D$ 1.4590. Reaction of I with CH_2:CHOAc gives unstable $(EtO)_2P(O)SCH_2CH(OAc)Cl$ (V) in quant. yield, which is converted at 100° to III (65%), $b_{0.05}$ 83°, $n^{25}D$ 1.4093, with some AcCl as volatile product. Treatment of V with 1 mole water gives III (58%). I with isopropenyl acetate gives $(EtO)_2P(O)SCH_2COMe$ (VI) (60%), $b_{0.07}$ 82°, $n^{25}D$ 1.4685 (*p*-nitrophenylhydrazone m. 92–3°), and AcCl. Direct condensation of I with Me_2CO also yields VI (50%).

C. A. Finch

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MICHALSKY, J

Distr: 4E3d

Red anilines. II. α-Oxo-γ-(3,4,5-trimethoxyphenyl)- and α-oxo-γ-(3,4,5-trimethoxy-2,6-dibromophenyl)butyric acid. J. Michalsky and M. Surá (Univ. Brno, Czech.). *Mikrochim. Acta* 1959, 458–62(1959); cf. *C.A.* 54, 4481f.—Cleavage of α-(*p*-dimethylaminophenylimino)-β-oxo-δ-(3,4,5-trimethoxyphenyl)valeronitrile (I) with dil. HCl leads to α-oxo-γ-(3,4,5-trimethoxyphenyl)butyric acid (II), and not, as previously reported (*loc. cit.*), to 3-hydroxy-4,5,6-trimethoxyindan-3-carboxylic acid. As proof, α-oxo-γ-(3,4,5-trimethoxy-2,6-dibromophenyl)butyric acid (III) was prepd. by acid cleavage from α-(*p*-dimethylaminophenylimino)-β-oxo-δ-(3,4,5-trimethoxy-2,6-dibromophenyl)valeronitrile (IV). IV, with both reactive hydrogens replaced by Br, easily reacted with *o*-$C_6H_4(NH_2)_2$ and 2,4-$(O_2N)C_6H_3NHNH_2$, and oxidative decarboxylation with H_2O_2 led to β-(3,4,5-trimethoxy-2,6-dibromophenyl)propionic acid (V) with evolution of CO_2. In the same manner, I led to II which, in neutral H_2O_2 soln., split off CO_2 almost quant. to yield β-(3,4,5-trimethoxyphenyl)propionic acid (VI). E.g., Br (3.5 g.) in glacial 10 ml. AcOH was slowly added to a soln. of 2.4 g. VI, kept 2 hrs. at room temp., the excess Br removed with Na_2SO_3, the mixt. dild. with 250 ml. H_2O, and the pptd. cryst. V recrystd. from EtOH, m. 119–20°, yield 3.3 g. Dry C_6H_6 (30 ml.) and 2.5 ml. $SOCl_2$ were added to 2.3 g. V, dissolved and heated 3 hrs. at 70°, the oily acid chloride dissolved in 10 ml. C_6H_6 and added slowly, with const. stirring, to an Et_2O soln. of CH_2N_2 cooled to −15°, the whole allowed to stand 20 hrs. at −15°, filtered, HCl (gas) added till N evolution ceased, and kept for a while. After washing with H_2O, and drying over $CaCl_2$, the product was reduced in vol. to yield, after recrystn. from MeOH, 1-chloro-4-(3,4,5-trimethoxy-2,6-dibromophenyl)-2-butanone (VII), white needles, m. 107–8°. VII (2 g.) was dissolved in 10 ml. dry C_5H_5N, heated 30 min. to 60–5°, and Et_2O added to ppt. the pyridinium chloride as an oil; this was sepd. and poured, with vigorous stirring, into a soln. of *p*-$ONC_6H_4NMe_2$ (750 mg. in 8 ml. EtOH) and NaCN (500 mg. in 3 ml. H_2O) at 40° to form a deep red mixt. which yielded 1.7 g. IV, m. 170–2° (C_5H_5N–EtOH). IV (400 mg.) was split by heating 30 min. to 40° with a mixt. of 10 ml. Me_2CO and 10 ml. 15% HCl. Me_2CO was evapd., the oily α-ketone extd. 3 times with 20 ml. Et_2O, washed with H_2O, the Et_2O evapd. *in vacuo*, the oily remainder taken up in Me_2CO, H_2O and a few drops dil. HCl added, and left to stand several days. III pptd. as shiny mother-of-pearl colored leaves; these dried over P_2O_5 m. 83.5–5.5°; 2,4-dinitrophenylhydrazone, yellow needles, m. 195–7°; and 2-hydroxy-3-[β-(3,4,5-trimethoxy-2,6-dibromophenyl)ethyl]quinoxaline, needles, m. 224–5°. III (42.6 mg.) dissolved in 1 ml. 0.1*N* NaOH, the soln. brought to pH 7, treated with 0.3 ml. 3% H_2O_2, released in 15 min. an almost quant. amt. of CO_2 (measured volumetrically in a gas microburette), acidified and V, m. 120–1°, recrystd. from EtOH. A mixt. of V and β-(3,4,5-trimethoxy-2,6-dibromophenyl)propionic acid showed no mixed m. p. depression. Similarly, II, prisms, m. 136–7°, yield 80%, was obtained by acid cleavage of I; its 2,4-dinitrophenylhydrazone, deep red needles, m. 211–13°. II was decarboxylated with H_2O_2 as above to yield VI, m. 101–2°, identical in m.p. and mixed m.p. with β-(3,4,5-trimethoxyphenyl)propionic acid. Stefan Berger

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MICHALSKY, J.

The red anilides. I. α-(p-Dimethylaminophenylimino)-β-oxo-δ-(3,4,5-trimethoxyphenyl)valeronitrile and its lower homologs. J. Michalsky and L. Sadlick (Masaryk Univ., Brno, Czech.). *Monatsh.* 90, 171–80(1959).—A number of α-(p-dialkylaminophenylimino)-β-oxo-(3,4,5-trimethoxyphenyl)alkane nitriles were prepd. via the method of Kröhnke (*C.A.* 42, 3746g), followed by hydrolysis to the β-oxo(3,4,5-trimethoxyphenyl)alkane carboxylic acids. 3,4,5-Trimethoxybenzoyl chloride, prepd. from 50 g. 3,4,5-trimethoxybenzoic acid in the usual manner, was added slowly to an Et_2O soln. of CH_2N_2 which had been cooled to −10°. After a while, 27 g. cryst. 3,4,5-trimethoxy-ω-diazoacetophenone sepd. out. This was isolated and converted (via the Wolff rearrangement) to 3,4,5-trimethoxyphenylacetamide. The remaining soln. evapd. to dryness, the residue taken up in Et_2O, HCl added till N evolution ceased, washed with H_2O, dried over $CaCl_2$, and reduced in vol. gave 23.7 g. crude 3,4,5-trimethoxy-ω-chloroacetophenone (I), recrystd. from Et_2O or MeOH as white needles, m. 86–7°. Dry C_5H_5N (30 ml.) poured over 15 g. I, the soln. heated a short time to 60°, and cooled gave 10.7 g. almost pure 3,4,5-trimethoxyphenacylpyridinium chloride (II) (48% yield), colorless crystals, m. 222.5–3.0° (EtOH–Et_2O). p-$ONC_6H_4NMe_2$ (7 g.) in 75 ml. EtOH and 4.6 g. NaCN in 50 ml. H_2O, heated to 40–50°, were added rapidly, with vigorous stirring, to 15 g. II in 100 ml. EtOH. The reaction mixt., colored blood-red momentarily, then the "red anilide," α-(p-dimethylaminophenylimino)-β-oxo-β-(3,4,5-trimethoxyphenyl)propionitrile (III) (15.1 g., 80% yield) sepd. out; H_2O was added after 10 min., III filtered off, washed with H_2O, then dil. EtOH, and dried. Recrystn. from C_6H_6–EtOH (3:2) yielded garnet red, monoclinic leaves (green surface, metallic sheen), m. 184.5°. Similarly, α-(p-diethylaminophenylimino)-β-oxo-β-(3,4,5-trimethoxyphenyl)propionitrile, red monoclinic prisms (violet metallic sheen), m. 131–1.5°, yield 86%, was prepd. from II, p-$ONC_6H_4NEt_2$ and NaCN. Concd. HCl (5 ml.) was poured over III and the mixt. heated 10 min. on a steam bath. The soln. lost its color, III decomposed, 3,4,5-trimethoxyphenylglyoxylic acid sepd. out simultaneously as long, colorless needles, m. 150–1° (H_2O), yield 500 mg. (76.5%); 2,4-dinitrophenylhydrazone, orange yellow needles, m. 207.5° (EtOH); 2-hydroxy-3-(3,4,5-trimethoxyphenyl)quinoxaline, yellow needles, m. 239° (aq. EtOH). Similarly, from 1-diazo-3-(3,4,5-trimethoxyphenyl)-2-propanone, via 1-chloro-3-(3,4,5-trimethoxyphenyl)-2-propanone (white needles, m. 76.5–7.0°), was obtained α-(p-dimethylaminophenylimino)-β-oxo-γ-(3,4,5-trimethoxyphenyl)butyronitrile (IV), violet needles, m. 223.5–4.5°. Acid hydrolysis of IV with dil. HCl in Me_2CO gave β-(3,4,5-trimethoxyphenyl)-α-oxopropionic acid, colorless needles, m. 167–8°. β-(3,4,5-Trimethoxyphenyl)-2-propanone (11 g.) via the Wolff rearrangement, in 100 ml. MeOH boiled 0 hrs. with 10 g. KOH in 50 ml. H_2O, cooled, acidified with dil. H_2SO_4, the pptd. Na_2SO_4 sepd., the vol. decreased, neutralized with KOH, and carefully reacidified, yielded cryst. β-(3,4,5-trimethoxyphenyl)propionic acid (V), colorless needles, m. 104° (H_2O). Well dried V (5.4 g.) dissolved in 100 ml. C_6H_6, to which had been added 5 ml. $SOCl_2$ and several drops dry C_5H_5N, kept 40 hrs. at 15°, heated 3 hrs. at 65°, diazotized to the diazoketone, and then treated with HCl till the N evolution ceased yielded 1-chloro-4-(3,4,5-trimethoxyphenyl)-2-butanone (VI), colorless crystals, m. 74–4.5°. The corresponding pyridinium chloride was prepd. in the described manner from VI which, by treatment with p-$ONC_6H_4NMe_2$ and NaCN, gave α-(p-dimethylaminophenylimino)-β-oxo-δ-(3,4,5-trimethoxyphenyl)valeronitrile (VII), orange needles, m. 156–6.5° (C_6H_6–EtOH), yield 81%. VII (500 mg.) heated 10 min. on a steam bath with 150 mg. o-$C_6H_4(NH_2)_2$ in 20 ml. AcOH and a few drops H_2SO_4, cooled, H_2O added, pptd. 2-[2-(3,4,5-trimethoxyphenyl)ethyl]quinoxaline-3-carbonitrile, m. 165–7°.

Stefan Berger

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MICHALSKI, Jan; BORECKA, Barbara; KAPECKA, Teresa; STRZELECKA, Helena

Reaction of dialkoxyoxophosphoranesulfenyl chlorides with organic thiols. Rocz chemii 33 no.4/5:1255-1257 '59. (EEAI 9:9)

1. Katedra Chemii Organicznej Politechniki, Lodz i Zaklad Syntezy Organicznej Polskiej Akademii Nauk, Lodz.
(Alkoxy groups) (Thiols) (Phosphorane)
(Sulfenyl chlorides)

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MICHALSKI, Jan; MARKOWSKA, Anna; STRZELECKA, Helena

Reaction of dialkoxyoxophosphoranesulfenyl chlorides iwht amines. (EEAI 9:9)
Rocz chemii 33 no.4/5:1251-1253 '59.

1. Katedra Chemii Organicznej Politechniki, Lodz.
(Amines) (Alkoxy groups) (Phosphorane)
(Sulfenyl chlorides)

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GODLEWSKA-ZWIERZAK, Krystyna; MICHALSKI, Jan; STUDNIARSKI, Kazimierz

Alkyl and alkenyl pyridines. V. Some new aerivatives of barbituric acid with pyridylethyl side chain. Rocz chemii 33 no.4/5:1215-1217 '59. (EEAI 9:9)

1. Katedra Chemii Organicznej Politechniki, Lodz.
(Pyridine) (Barbituric acid) (Urea) (Alkenyl groups) (Alkyl groups) (Sodium ethoxide) (Pyridylethylmalonate)

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MICHALSKI, JAN

Organophosphorus compounds of sulfur and selenium. XI. A simplified procedure for synthesis of dialkoxyoxophosphoranesulfenyl chlorides, $(RO)_2P(O)SCl$. Jan Michalski (Politechnika, Łódź, Poland). *Roczniki Chem.* 33, 835–6(1959)(English summary); cf. *C.A.* 53, 10013*h*.—A simplified procedure for prepn. of dialkoxyoxophosphoranesulfenyl chlorides, $(RO)_2P(O)SCl$ (I) is described. A given dialkylphosphite (2 moles) in C_6H_6 soln. is treated with 1 mole of S_2Cl_2 at −5 to 0°. The product (without being isolated) is chlorinated with 1 mole of SO_2Cl_2, keeping the same temp. After removal of the solvent and volatile products by evapn. *in vacuo* at room temp., I is purified by distn. *in vacuo*. I (R = Et), $b_{0.4}$ 61–3°, n_D^{20} 1.4672, 60% yield, was obtained. A. Kreglewski

3

1-Jr. (ME)
6?
4E5d
4E2c fp

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Reactions of organic disulfides with dialkyl phosphites, dialkyl thiophosphites and sodium derivatives. A new synthesis of *O,O,S*-trialkyl thiophosphates, *O,O,S*-trialkyl dithiophosphates and *O,S*-dialkyl hydrogen phosphorothiolates. Jan Michalski, Jan Wieczorkowski, Jan Wasiak, and Bożena Pliszka (Politechnika, Łódź, Poland). *Roczniki Chem.* 33, 247–50(1959)(in English).—The reactions between acyl disulfides (I) and dialkyl phosphites (II), dialkyl thiophosphites (III), or their Na derivs. (IV) and (V), resp., have been studied (b.p./mm. and n^{20}_D given for the compds. below). II react spontaneously only with I to give $(RO)_2P(S)OP(O)(OR)_2$ (R = Et), 78–80°/0.03, 1.4453, and $(RO)_2PSOH$ (R = *Et*), 62–3°/0.03, 1.4044, in 70% yield. IV react with I in C_6H_6 at 20° as well as with diaryl or dialkyl disulfides (VI), R'SSR', to yield $(RO)_2P(O)SR'$ (R = Et, R' = *Bu*; 135–6°/13, 1.4587; (R = *Et*, R' = *Ph*), 115–16°/0.6, 1.5248; and R'SNa. An analogous reaction takes place between V and VI giving 64% *O,O*-diethyl *S*-butyl dithiophosphate, 145°/12, 1.4931. An ionic mechanism is suggested for this reaction. The reaction between IV and VI in boiling C_6H_6 led to secondary dealkylation due to nucleophilic attack of an anion contg. S, which gave R'SP(O)(OR)ONa (VII) and R'SR. VII are characterized as cyclohexylamine salts: R = Et, R' = Bu, m. 125–6°; R = Et, R' = Ph, m. 130–1°. The yields of VII were 60–70%.

A. Kręglewski

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MICHALSKI, J.; WIECZORKOWSKI, J.

Organophosphorus compounds of sulfur and selenium. VIII. Action of organic thio- and selenocyanates on full esters of tervalent phosphorus acids; synthesis of O, O, S-trialkyl thiophosphates, O, O, Se-trialkyl selenophosphates and their analogues. p. 105.

ROCZNIKI CHEMII. (Polska Akademia Nauk) Warszawa, Poland. Vol. 33, no. 1, 1959

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MICHALSKI, J.

Optically active *P*-ethoxy-*P*-ethyloxophosphoranesulfenyl chlorides. J. Michalski and A. Ratajczak (Tech. Univ., Łódź, Poland). *Chem. & Ind.* 1959, 839-40.—Optical activity for unsym. substituted P was established by prepn. of the optically active isomers of *P*-ethoxy-*P*-ethyloxophosphoranesulfenyl chloride (I). *O*-Ethyl-*P*-ethylphosphonothioic acid was resolved by quinine to the (+)-acid, b$_{1}$ 89–90°, n_D^{19} 1.4918, α 14.5° (neat, 1 dm.), and the (−)-acid, b$_{1}$ 95–6°, n_D^{19} 1.4902, α −14.8°. These and sulfuryl chloride gave the active forms of I, the intense color of which precluded detn. of optical activity. However, (+)-I and C_2H_5 gave (+)-*O*-ethyl-*S*-(2-chloroethyl)-*P*-ethylphosphonothionate, b$_{0.08}$ 64–6°, n_D^{19} 1.4921, α 43.3°, while (−)-I gave the corresponding (−) ester, b$_{0.08}$ 64–5°, n_D^{19} 1.4928, α −42.6°. Olden P. Paris

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